Claims

What is claimed is:

[c1] A windowframe capacitor, comprising:

a housing having a bottom surface and a top surface, wherein an aperture is formed in a central portion thereof extending from the top surface to the bottom surface; and

capacitive material disposed within the housing to create a desired amount of capacitance;

wherein the bottom surface is provided with electrical connections adapted to be connected to a substrate.

[c2] The windowframe capacitor of Claim 1, wherein the aperture is rectangular.

[c3] The windowframe capacitor of Claim 1, wherein the capacitive material comprises a layer of an electrically conductive material and a layer of a dielectric material.

[c4] The windowframe capacitor of Claim 3, wherein the housing is made from a plastic material.

[c5] The windowframe capacitor of Claim 1, wherein said electrical connections provided on the bottom surface comprise a ball grid array.

[c6] The windowframe capacitor of Claim 1, wherein the capacitive material and the housing comprise co-fired ceramic.

[c7] The windowframe capacitor of Claim 1, wherein the aperture is configured to fit over a semiconductor die, and wherein said electrical connections are configured for connection to a package substrate on which the semiconductor die is mounted.

[c8] A semiconductor package assembly, comprising:

a semiconductor die mounted on a portion of a top surface of a package substrate; and

a windowframe capacitor having an aperture formed therein, and mounted on the top surface of the package substrate surrounding the semiconductor die.

[c9] The semiconductor package assembly of Claim 8, further comprising an electronic component mounted on a top surface of the windowframe capacitor.

[c10] The semiconductor package assembly of Claim 8, further comprising a second windowframe capacitor mounted on a top surface of the first windowframe capacitor.

[c11] The semiconductor package assembly of Claim 8, wherein the aperture is rectangular.

[c12] The semiconductor package assembly of Claim 8, wherein the windowframe capacitor comprises a housing.

[c13] The semiconductor package assembly of Claim 12, wherein the windowframe capacitor comprises a capacitive material disposed within the housing.

[c14] The semiconductor package assembly of Claim 13, wherein the capacitive material comprises a layer of an electrically conductive material and a layer of a dielectric material.

[c15] The semiconductor package assembly of Claim 14, wherein the housing is made of a plastic material.

[c16] The semiconductor package assembly of Claim 13, wherein the capacitive material and the housing comprise a co-fired ceramic.

[c17] The semiconductor package assembly of Claim 8, wherein the windowframe capacitor is mounted on the package substrate via a ball grid array.